On gender-specific socio-demographic determinants of the transition from school to work : a longitudinal analysis based on French data

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On gender-specific socio-demographic determinants of the transition from school to work: a longitudinal analysis based on French data

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Abstract:

This paper looks at the professional and family history of young people who definitively left school in 1998 and were surveyed three years later, in 2001. Using original data from a survey called "Generation 98" conducted by the French Ministry of Education and Labor we built a longitudinal database to estimate the probability of getting a job (short term contract or unlimited duration contract) at three points in time, separately for each gender. Our econometric framework relies on the specification of three types of panel data modelling, derived from a Probit model with random effects.

Our findings show that the transition to a stable job depends heavily on the decision to leave the parental home, this being true for both men and women. More heterogeneous types of behavior are observed among men as far as getting a short term contract (henceforth called CDD) is concerned. As a result, young women do not seem to have much flexibility when trying to combine the double constraint of family and active life. Moreover, the birth of children has a negative and durable effect on the probability that women get a stable job.

Key Words: transition from school to work, family incidence, panel data, random effects.

JEL classification: C33, C34, J13, J16

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Introduction

The transition from school to work and adulthood has been deeply transformed during the last two decades in Europe, as attested by several works in various fields of the social sciences[1]. These transformations are mainly characterized by longer periods spent in the educational system as well as by a more complex transition from dependence (living with parents) to independence (living alone or as a couple).

Some papers in the literature have underlined the progressive vanishing of the standard model of transition to adulthood for people born after the second World War (Corijn, 2001) which consisted in the following sequence: leaving the educational system, entering the labor market and getting a job, leaving the parental residence and finally forming a family and having children. During the past two decades, these different stages take more time, whereas for older cohorts, they took place during a relatively short period of time. As young people gradually faced more complex mechanisms of transition to adulthood, social scientists have explored three main directions (Corijn, 2001): a first research direction, which is also that of this paper, states that the transition to adulthood is characterized from the beginning by a dual career, opposing work and family. A second research direction puts more emphasis on the constraints of the life cycle and stresses aspects that are specific to each society. A third approach finally focuses on psychological arguments.

This paper is an attempt to better understand the relationship between the links of an individual with his/her family and his/her job career on the basis of French longitudinal data covering young people who left the educational system in 1998. In particular, we develop an appropriate econometrical framework to test the effect of these family links on labor market outcomes during the first three years of the presence of an individual on the labor market.

Whereas in most European countries the dominating reference model is still that where the young individual enters the labor market while still living at his/her parents' home, the contemporary story in France is that of a gender specific model where young women leave the parental home before entering the labor market.

In France, as well as in most of the OECD countries, the unemployment rate among youth is higher than the average unemployment rate of the population (20.7% in 2000, more than twice

[1] See Corijn and Klijzing (2001) for a synthetic and comparative analysis in Europe and Australia.

that of adults which was equal to 8.4% in 2000; see, OECD, 2001). One of the major characteristics of the employment crisis in France is that unemployment is particularly acute in the extreme age brackets, that is, at the end of schooling and at the end of active life, and takes then the form of long-term unemployment or repeated unemployment spells (Recotillet and Werquin, 2003).

While since the 1980s young people face quite a high unemployment rate, the number of precarious forms of job grew rapidly, even tripling between 1983 and 1998. This relatively new model of regulation of the labor market has been largely analyzed on the basis of segmentation theory (Taubman and Wachter, 1986; Ryan, 2001). Even in a period of economic growth, people having been employed in the precarious segment of the labour market do not find more valuable jobs. It looks as if human capital had been maintained at the same level and regularly used, leading to difficulties in the labor market at a time when important changes take place in productive structures.

Facing this economical context, training and education public policies attempted, already in the early 1980s, to enhance the average level of education of the overall population, by developing initial educational opportunities, setting up more active labor market policies for young people (mainly those with a low level of qualification) and massively developing training schemes.

We have thus observed in France, as well as in Europe, since the 1980s an important increase in the level of education but, at the same time, in the difficulties faced by the youth entering the labor market, especially among those with a low level of education. In the 1990s a controversy arose concerning the relative importance of professional experience versus diplomas for the youth entering the labor market. Several arguments were put forth, sometimes contradictory, suggesting that the determinism of some paths comes from the labor market itself or from observed or unobserved human capital, or even from both elements (see Balsan *et al.*, 1996 for a more detailed discussion). The main issue for economists consisted however in clearly setting apart the path dependency from the impact of diplomas, hence the use of longitudinal data and the implementation of appropriate econometric techniques.

Let us also stress that the employment crisis brought about a more diffuse definition of the youth (Galland, 1993 and 1997, Dormont and Dufour-Kippelen, 2000; Villeneuve-Gokalp, 2000; Battagliola, 2001). On one hand, young people follow diversified paths in the labor market, mixing unemployment spells, short term jobs or more stable jobs but at the same time leave later and later the parental home. While economists had often translated the concept of youth into a

given age category in which investment in human capital is very intensive (Ben-Porath, 1967), we believe that the concept of youth should be understood in a more dynamic way. It should be considered as a stage where two types of transition take place: from the end of school to entrance in the labor market but also from living with one's parents to sharing life with another person and ultimately constituting a family. Youth is thus a stage in the biography of an individual rather than simply the characteristic of a given age group (Battagliola, 2001).

It is hence likely that the transition to work or adult life cannot be understood correctly if only factors related to training and labor market are taken into account. However, since female participation to the labor force increased steadily, at least in France, since the early 1960s the issue of combining family and professional constraints becomes more and more relevant.

The difficulties faced by youth in the labor market as well as the clear tendency to stay longer at school led to a new phenomenon, that of a later departure from the parental residence. We could at this stage set forth a theoretical argument developed by Becker (1993) that establishes to what extent the increased level of education among younger generations and the higher degree of labor force participation among women reduces the frequency of marriage and parenthood. He refers to price and income effects to link up the level of education and the degree of marital commitment.

We can however put forth more complex mechanisms such as those described in several empirical studies (Galland, 1997). When diplomas become less valuable on the labor market, the transition from school to work will be longer and, to a certain extent, linked to some amount of professional downgrading among young people. In such a case, young people are led to review downwards their professional expectations.

A longitudinal survey ('Generation 98') carried out recently by the CEREQ[2] among individuals who left school in 1998 provides very interesting information that would help understanding the gender specific link between cohabitation with parents, level of education, and transition to work. These data seem to validate the assumption of an increased dependency on the family, as young people reach the stages of entry into adulthood much more later.

Financial dependence explains undoubtedly, however partially, this later departure from the parental home. Young people, and especially young women, are more often than previously employed only on a part time basis and the number of their weekly hours of work has also decreased. It takes them longer to find their first job and they are more frequently unemployed or

out of the labor force three years after leaving school. In addition, family responsibilities, in particular in the case where these women have children at the beginning of their working life, have a negative impact on their labor force participation whereas the opposite is observed among men.

Part-time work is more prevalent among women. Their average activity rate is around 60% in 1999 whereas it amounts to less than 50% for young men (Daune-Richard, 2001). When looking at the professional activities of the spouses inside the family area, women appear thus to have a secondary role.

All these arguments are in favor of an analysis of transition from school to work using factors linked to family life, going beyond the traditional analysis that takes into account only the professional experience and the level of education to explain outcomes in the labor market. Our empirical investigation attempts thus to apprehend a more complex relationship between one's links to the family and one's professional career. More precisely we will try to understand to what extent the family background (whether one lives with the parents, the amount of time it took until one leaves the parents' home, the number of children…) shapes the transition to the labor market.

The CEREQ survey we use describes in great details these links to the family as well as the labor market history of the individual. This is the first time in France that we have longitudinal data on youth that include a monthly diary on the way of living (living with parents, as a couple or alone), the time spent in each of these states and the number of children.

This paper is essentially empirical but the results of such an investigation could lead to progress at the theoretical level as far as it looks at the role of the family in the transition to work, for men as well as for women.

In the following section, we present in detail the data used, the *Generation 98* survey, and indicate how we built our longitudinal sample for empirical modelling (section 1). In the second section, we describe the econometric framework, based on three specification of a Probit model with random effects. The first specification introduced is rather standard (Hsiao, 1994). This specification assumes that the individual effect is statistically independent of the regressors. In a more general specification, the individual effect is allowed to be correlated with time-varying regressors, making use of a linear projection (Woolridge, 2002). Estimating such a model is

[2] Center for the study and research on qualification, French Ministry of Education and Labour.

therefore a way to test the more restrictive hypothesis of the standard probit model with random effects and to check to what extent these restrictions have an impact on the value of the parameters that are of interest. In fact it turns out that we conclude that the parameters' estimates do not significantly vary across these specifications. In a third specification we break up the individual unobserved heterogeneity parameter, relying on a discrete approximation of the continuous distribution of this parameter. We refer here to the latent class model category frequently used in duration models (Heckman and Singer, 1984). This specification leads to more accurate parameter estimations and thus improves our understanding of family effects. In the last part of the paper, we present the main results, especially those related to the family background, on the basis of information generated by the *Generation 98* survey. A final section concludes.

The Data

The national survey 'Generation 98'

This longitudinal survey was carried out in 2001 by the French Ministry of Education and covered the three first years of active life of a cohort of young individuals who left the educational system in 1998, whatever their diploma[3]. This cohort left the educational system during a period characterized by increasing educational levels among those entering the labor market, at a time where labor market conditions were not difficult (as they became later on). This survey provides information on each one of the jobs these young people had during the first years, offering great information on the dynamics of the path they followed. It especially allows us comparing the transition from school to work of young people with various educational backgrounds, in terms of level of education as well as of school tracks (technological, vocational or general).

The Population surveyed

As described previously, the survey covers all the young people who left the educational system in 1998, so that their educational level varies from 7th grade to high university diploma. In all

[3] The survey covers individuals who dropped out of school without any diploma as well as others who have a doctorate.

cases, and this is the specificity of this system of surveys[4], these young individuals stopped studying for at least one year and did not go back to school one year later. Remembering the clear distinction that exists in France between school and work we are thus able to follow over time individuals entering the labor market for the first time. What these young individuals have in common is not their age but the fact that they left school the same year. As a whole, Generation 98 covers 98% of the relevant population, being thus representative of the 742,000 young people who left the educational system in 1998. On the whole, a little more than 55,000 young people answered to the survey.

The sample: 55,000 young people surveyed in 2001

These 55,000 young people were surveyed by phone and asked questions about their educational background and professional history. One of the main goals of this longitudinal survey was to find out what the individual did, month after month, during the first three years after leaving school. Table 1 provides the distribution of these young individual by educational level, using the classification that was relevant in France in 1998 when they left school.

Table 1 – Educational level by gender, when leaving the educational system in 1998

	French Classification	%	% Female
No diploma	VI	8%	41%
Courses in Vocational Studies Certificate (Bep) or Vocational Certificate (Cap) without obtaining certification	V bis	8%	36%
Courses in Vocational Studies Certificate (Bep) or Vocational Certificate (Cap) with diploma	V	17%	43%
Baccalaureate level without diploma	IV	4%	39%
Vocational or technological baccalaureate	IV	13%	51%
One or two years after the baccalaureate, without getting a diploma	IV+	13%	54%
Baccalaureate + 2 years	III	19%	55%
First stage of tertiary education: baccalaureate + 3 or 4 years	II	10%	63%
Second stage of tertiary education: baccalaureate +5 or more years	I	8%	43%
-	-	100%	49%

Source: CEREQ

Main themes of the questionnaire

The following main topics were covered by the survey:

- detailed description of the courses taken, not only during the year the interview took place, with, in addition, a list of the last diplomas awarded or the last courses taken.

[4] The previous survey (the first one of a series) of this scale has been carried out in 1997, surveying the youth who left the educational system in 1992. The next survey is going to cover young people who left the

- Professional experience the young may have acquired while studying (training, casual jobs or regular jobs).
- Demographic and social background (gender, age, place of birth, reasons to leave school, occupation of the parents and of the spouse, number of children,…). Of particular interest is that, for the first time, information is available, month after month, on the link between the individual and his/her family: did he/she live with his/her parents, alone or with his(her) spouse? Moreover, the survey includes subjective information on the courses taken, the jobs held and the way they see their future in the labor market, three years after leaving school.
- Very detailed information on the various jobs and employers the youth have had (how the job was found, its duration, the occupation, industry, wage, status, number of hours worked, vocational training received, jobs held abroad, etc.). Each job spell recorded in the monthly diary is described in further details.
- Detailed information on unemployment spells (duration, reservation wage, steps used to find a job, registration with the national agency for employment, unemployment benefits..)
- Detailed information on the training that took place outside the job. In addition since some young people decided to continue their education, one year after they left school for the first time, these spells are also described. This information concerns for instance the duration of the courses taken, the reason why they participated in such a training course and the place where it took place.

The data collected on the firms in which the youth worked

The recording of job spells is based on a specific definition: a job spell is defined as an uninterrupted working spell in the same unit of a firm. During a spell, an individual may have held one or several positions, depending on the career's progress. For each job spell, questions have been asked on the characteristics of the company (its size, localization, the industry and sector, whether public or private, to which it belongs and the number of units it includes) and on the job itself (the status of the individual, that is whether he/she works under a fixed term contract called CDD, a youth training scheme or an open-ended contract called CDI, the occupation he/she held on the basis of a 4 digits classification of the French occupations, its duration, the net wage earned, the amount of vocational training received and the degree of satisfaction enjoyed by the individual). Mobility prospects (whether the young individual is

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educational system in 2001 and will start in 2004.

looking for another job or not) were also recorded for each job spell, whereas they had been only recorded for the last job in the previous survey.

The database we worked with

In order to obtain a longitudinal database that was adapted to our research goals, we divided the calendar into three periods, the first one covering approximately[5] the first twelve months after the individual left school, the last one ending at the time of the interview. The situation of each individual in the labor market is observed in March each year during three years (March 1999, March 2000 and March 2001). The sample used for the paper includes only those individual on whom we had information on each of the three periods distinguished.

The job status classification included five categories: fixed term contract (called CDD), unlimited duration contract (CDI), unemployment, training taking place outside of job (see below) and cases where the individual did not participate in the labor force. For each status, we computed the number of months spent under it, excluding from the calculation the month in which the individual was observed.

The variables describing the relationship between the individual and his/her parents and the type of cohabitation

The Generation 98 survey provides us with quite a lot of information on the relationship of the individual with his(her) parents, his(her) decision to cohabit with another person or simply to leave the parental residence and the number of children. In addition, and for the first time in the survey system we are dealing with, information on the relationship with the parents and on the type of cohabitation is available each month. This allows us getting the information at each point in time that was selected (each March) and computing the time elapsed since the individual left the parental home.

The data indicate that there is a huge proportion of young men living still with their parents during the first year in which they entered the labor market but this proportion decreases rapidly with time (table 2). The pattern for young men is clearly different from that for young women since among the latter only half of them live with their parents in March 1999 (70% among males) as they leave more rapidly their parents' home to live as a couple. On the other hand the proportion of young people living alone is more or less the same for men and women. There is thus clearly an important difference in the behaviour of men and women as far as leaving the

[5] The young people do not leave the educational system exactly the same month but the dispersion is not important.

parental home is concerned, a result often underlined in the sociological literature (Battagliola, 2001).

Table 2 – Relationship with the parents as a function of time and gender

	Male			Female		
	March 1999	March 2000	March 2001	March 1999	March 2000	March 2001
Living with parents	70%	63%	56%	54%	41%	33%
Living alone	17%	20%	22%	28%	39%	45%
Living with a spouse	13%	17%	22%	18%	20%	22%
	100%	100%	100%	100%	100%	100%

The transition from school to work and from youth to adulthood is often considered as endogenous by sociologists and economists. They often point out that the degree of success in the transition from school to work is related to the decision taken by young men to leave the parental home, while women, in particular those that are less qualified, leave more quickly their parents to live with their spouse (Dormont and Dufour, 2000). Looking at the proportion of young individuals who are unemployed (Table 3) highlights the differences between the genders, as far as their relationship with their parents is concerned.

Table 3 – Relationship with parents according to time, job status and gender

	Male			Female		
	March 1999	March 2000	March 2001	March 1999	March 2000	March 2001
	Employed with a fixed term contract			Employed with a fixed term contract		
Living with parents	69%*	63%	57%	50%	38%	31%
Living alone	13%	18%	23%	30%	41%	47%
Living with spouse	17%	19%	20%	20%	21%	22%
	Employed with a unlimited duration contract			Employed with a unlimited duration contract		
Living with parents	54%**	47%	42%	39%	30%	23%
Living alone	22%	27%	30%	37%	46%	51%
Living with spouse	24%	26%	28%	24%	25%	25%
	Unemployed			unemployed		
Living with parents	81%	78%	75%	67%	56%	48%
Living alone	7%	8%	9%	22%	31%	38%
Living with spouse	11%	14%	15%	12%	12%	14%

**: Among the young males employed under a fixed term contract, 69% live with their parents*

*** Among the young males employed under an unlimited duration contract, 54% live with their parents*

The proportion of males that is unemployed but lives with their parents remained stable and high throughout the period (about 80%) while the proportion of females unemployed living with their parents decreased rather rapidly over time, from an original level of 67% to 48% in March 2001. The proportions of males and females that are unemployed but live alone are however quite similar. This implies that women leave the parental home to live with their spouse rather than to live alone.

While it is easy to understand why young people stay with their parents as long as they do not get a job, it is rather surprising to observe gender or job status related differences. It thus appears that young men live longer with their parents when their job status is more precarious (fixed term contract or CDD) and when they leave the parental home they probably tend to live alone, at least in the early stages of their career. Whereas the proportion of individuals living alone is quite similar to that living with a spouse, one observes important differences among women when the two kind of job status are taken into account.

In order to better take into account the heterogeneity between individuals as far as socio-demographic variables are concerned, we included as explanatory variables the father's status in the labor market at the time the survey[6] took place and the number of children an individual has (when living as a couple or not). Unfortunately we do no have any information on the father's or mother's diploma; we only know their status in the labor market and eventually their occupation. We decided not to include the mother's status in the labor market because it is likely to introduce collinearity among the explanatory variables and as a consequence to prevent the convergence of the likelihood.
The next section explains in detail the statistical method used: a probit model with random effects.

Specification and estimation of probit models with correlated and uncorrelated random effects

Whereas in the case of linear models it is possible to test the nature of the individual effect (fixed or random), it is more difficult, even impossible, when the dependent variable is of a qualitative

[6] Employed, unemployed or out of labor force.

nature[7]. If the dependent variable is of the binary type, one may use the logit model with fixed individual effects and then the estimations are convergent. However when using a probit model, convergent estimates are obtained only when the individual effects are considered as random.
Since one of the goals of this study is to estimate at the same time the impact of variables that remain constant over time (e.g. the educational level) as well as the effect of variables that vary over time (e.g. whether and when the individual left the parental home, the number of children,…) we have to use a probit model with random effects.
The individual effect (the unobserved heterogeneity) has been assumed to be random so that the error term ω_i is broken down into the sum of two terms, a random individual specific effect (u_i) and the regular error term (ε_{it}).
Since the logit model cannot be used if one wishes to introduce a model with random effects[8], we have used a probit model with random effects. Such an approach forces us however to assume that the individual effect is independent from the explanatory variables. If such an assumption does not hold, it is likely that the estimates will not be convergent. One way of overcoming this difficulty would be to assume that the individual effect is only correlated with some of the explanatory variables, those that vary over time. With such an approach it is possible to make a distinction between the impact of unobserved individual heterogeneity and that of state dependence. Since the estimates of the parameters are not very different from those derived from a simple Probit model with random effects, our analysis will be based on such a simple probit model though, when analysing the results, we will refer to both specifications.

Our model will thus be specified as follows. The random term ω_{it} is expressed as the sum of two terms. The first, u_i, will be considered as specific to the individual while the second term will be written as ε_{it}. The (dependent) variable which is observed is y_{it} and it takes only the values 0 and 1. More precisely it will be assumed that :

$$y_{it} = \begin{matrix} 1 \text{ if } y_{it}^* > 0 \\ 0 \text{ if } y_{it}^* \leq 0 \end{matrix} \qquad (1)$$

with $y_{it}^* = x_{it}b + u_i + e_{it}$ a latent variable that cannot be observed.

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[7] See Greene (2001) for new and more flexible specifications.

[8] One of the characteristics of the logistic distribution is that the correlations between the residuals is equal to 0.5 but this cannot be the case with random effects since $E(\omega_{it},\omega_{is}) = \sigma_u^2 + \sigma_\varepsilon^2$ (see Maddala,1987).

It will be assumed that the random effect $w_{it} = u_i + e_{it}$ follows a normal distribution with an expected mean of zero. We may therefore write that :

$$\begin{aligned} \text{prob}\,(y_{it}=1) &= \text{prob}\,(e_{it} \rangle - a - x_{it}\,b - u_i) \\ &= \text{prob}\left(\tilde{e}_{it} \rangle - \tilde{a} - x_{it}\tilde{b} - \left(\frac{r}{1-r}\right)^{1/2} \tilde{u}_i \right) \end{aligned} \qquad (2)$$

with $\tilde{e}_{it} = \frac{e_{it}}{s_e}$, $\tilde{a}_{it} = \frac{a_{it}}{s_e}$, $\tilde{b} = \frac{b}{s_e}$ et $\tilde{u}_i = \frac{u_i}{s_u}$.

The share of the variance that is due to the individual effect will be measured by ρ with $r = \frac{s_u^{\,2}}{s_u^{\,2} + s_e^{\,2}}$; hence we have:

$$\text{prob}\,(y_{it}=1) = \Phi\left(\tilde{a} + x_{it}\tilde{b} + \left(\frac{r}{1-r}\right)^{1/2} \tilde{u}_i \right) \qquad (3)$$

In the more general case where d_{it} is equal to 0 (y_{it}=0) or 1 (y_{it}=1), we have:

$$\text{prob}\,(y_{it}=1) = \Phi\left(\left(\tilde{a} + x_{it}\tilde{b} + \left(\frac{r}{1-r}\right)^{1/2} \tilde{u}_i \right)(2d_{it}-1) \right) \qquad (4)$$

Moreover, conditional on $\tilde{u}_i$, the error term $\left(\frac{r}{1-r}\right)^{1/2} \tilde{u}_{it} + e_{it}$, follows a normal distribution where both the mean and the variance are equal to 1. Conditioning with respect to $\tilde{u}_i$ (Heckman, 1981) we derive :

$$\text{prob}\,(y_i = d) = \int_{-\infty}^{\infty} \prod_{t=1}^{T} \Phi\left(\left(\tilde{a} + X_{it}\tilde{b} \right)(2d_{it}-1) / \tilde{u}_i \right) f(\tilde{u}_i)\, d\tilde{u}_i \qquad (5)$$

where $\Phi(./\tilde{u}_i)$ is the normal distribution function with expected mean $\left(\frac{r}{1-r}\right)^{1/2} \tilde{u}_i$ and unit variance. It will be assumed that $\tilde{u}_i$ follows a standardized normal distribution.

In order to evaluate the normal distribution function, we may use approximations that are quite performing. The integration with respect to $\hat{u}_i$ requires however the use of particular methods. In order to optimize this computation, Butler and Moffitt (1982) have suggested to use the following relationship

$$\int_{-\infty}^{\infty} \exp\left(-z^2\right) g(z)\, dz = \sum_{j=1}^{G} w_j\, g\left(z_j\right) \qquad (6)$$

Here $g(z)$ corresponds to $\prod_{t=1}^{T} \Phi\left(\left(\tilde{a} + X_{it}\tilde{b}\right)\left(2d_{it}-1\right)/\tilde{u}_i\right)$ which is a function of $z = \hat{u}_i$ while $\exp(-z^2)$ is a function which is proportional to the expression of the standardized normal function for $\hat{u}_i$.

This method consists therefore in evaluating the integral on the basis of a weighted sum of the function g evaluated at a limited number of points (five maximum).

It is also possible to specify another form for the unobserved heterogeneity component and then formulate a probit model with individual random correlated effects (Chamberlain, 1984).

In order to specify a probit model with individual random correlated effects, it will be assumed that the u_i's are correlated with the means of the x_{it}. Let $x_i = [x_{i1},\ldots,x_{iT}]$.

$E[u_i / x_i]$ may then be approximated by a linear function (Mundlack, 1978) :

$$u_i = \sum x'_{it} a_t + \omega_i \text{ with } \omega_i \sim N(0, s_w^2) \qquad (7)$$

An appropriate restriction might be to specify that :

$$u_i = \sum x_{bit} a_t + \omega_i \text{ with } x_{bit} \text{ the mean of } x_{it} \text{ and } \omega_i \text{ normally distributed as } N(0, s_w^2) \qquad (8)$$

Using the latter expression in the probit model with individual random effects, we obtain what is called a probit model with individual random correlated effects. The estimation procedure that was used is described in Woolridge (2002, p.487-490). It amounts to estimating a probit model on grouped data. This procedure could be included in a more general framework in which there would be a non linear projection of the individual effect on the variables varying with time (Chamberlain, 1984).

As far as the specification of the unobserved heterogeneity distribution is concerned, we implemented a more general specification of the unobserved terms, using a latent class specification. Whereas in the probit model with random effect, the individual unobserved heterogeneity is continuously defined, in the latent class model this unobserved heterogeneity is discrete. Modelling unobserved heterogeneity with discrete parameter variation has been widely used in duration models (this is non parametric estimator developed by Heckman and Singer, 1984). That means that individuals are sorted into a set of classes that approximates the continuous distribution of the random effect.

Following that, we define a number of points of support for the discrete distribution of the unobserved heterogeneity corresponding to the number of latent classes. In our case, we used three or four classes depending on the estimated model. For each estimation, we obtained the probability of each support point.

The underlying behavioural model is the following probit model:

$$P\left(i,t\middle|j\right)=F\left[y_{it},b\,'x_{it}+u_{j}\right],\quad \text{Prob}\left[\text{class=j}\right]=F_{j} \tag{9}$$

$$\text{with}\ \ F_{j}=\frac{\exp(q_{j})}{\sum_{j}\exp\left(q_{j}\right)}$$

so that the class assignment is unknown and is estimated jointly with the binary probability of being employed with a CDD or CDI job contract.

Furthermore, in our model, the latent class probabilities depend on observed individual characteristics so that $q_{ij}=q\,'_{j}\,z_{i}$ and each class has its own vector of parameter estimates.

Results

As mentioned previously, we estimated our models separately for men and women on the basis of three specifications (probit model with random effects, probit model with individual random correlated effects and a latent class probit model) of a three period model. We used balanced panels because we concentrated our attention on all the transitions to a status with a fixed contract (CDD) versus all other situations or on all the transitions to a status with an unlimited duration contract (CDI) versus all other possibilities. In such a case, our panel is practically complete and this limits the risk of selectivity bias.

The results are given separately for men and women. The sample size for men is 70,155 and 55,026 for women. Throughout the paper we stressed differences between the paths followed by men and women in getting a fixed duration contract (CDD) or an unlimited duration contract (CDI). We present essentially the results of the probit model with random effects but we will also mention, whenever it appears to be relevant, the results derived from the probit model with latent class and the probit model with correlated unobserved heterogeneity.

Getting a stable job over the whole period

Tables 6, 7 and 8 in Appendix B give the results for the three specifications, for the probability to get a fixed term contract (CDD) as well as for that of getting an unlimited duration contract (CDI) at three points in time between 1999 and 2001. The results of the simple model are given in Table 6 while those of the latent class model are reported in table 7 and those of the model with correlated effects in table 8.

The individual unobserved heterogeneity is more important among women and for both genders among those getting a contract of unlimited duration (CDI)

The specification and estimation methods used for the probit model with random effects allow us to identify the share of the variance of the random individual effect in the overall variance (the "Rho" parameter in section II). This result is also established by the latent class model in which four classes emerged from the probability for women to get a CDI and three classes for the corresponding probability for men. First of all, it appears that the unobserved individual heterogeneity is higher among females in both cases, that of a CDD and that of a CDI. Such differences between the genders have been observed previously in longitudinal analysis of transition from school to work (Balsan *et al.*, 1996), whatever the estimation technique that was adopted[9].

Beyond all the observable factors that could be identified to explain the transition from school to work, it seems that women are more heterogeneous with respect to labor force supply decisions. It has long been established in the literature that the behaviour of women with comparable levels of education with respect to labor supply decisions could be extremely variable, depending on the weight given to the private sphere ('living as a couple') and to the education of the children (Willis, 1986).

[9] Previous work based on the « Generation 92 » survey that was conducted in 1997 among young people who left school in 1992 had already shown similar results.

These constraints play a more powerful role when women are young and may depend on the social environment in which they live. In other words, the female pattern of transition from school to work seems to be less homogenous than that of men and the differences between the genders in the values taken by the parameter “Rho” confirm this.

It is important to note that for women as well as for men, this unobserved heterogeneity is higher when one looks at he probability of getting a CDI. This is not really a surprising result since the main job status for the youth remains that of short term contracts. Those who are committed to more stable job contracts are presumed to be significantly different form the overall population.

Short term contracts are more selective with respect to the level of education of women and so are sorting mechanisms for unlimited duration contracts for both genders

Another interesting finding concerns the difference that exists between the genders with respect to the relationship between the level of education and the probability of getting a CDD. For young men, the level of education they reached plays a more discriminant role except for those with higher education who have a low probability of getting a CDD since they are frequently recruited for stable jobs (CDI) and for those with a low level of education for whom the short term contracts (CDD) constitute the main way of being employed in the labor market. On the other hand, among women, short term contracts are more prevalent either because they are imposed upon them or because they are a strategy they have themselves selected, this being true even among those with higher levels of education (level III for instance).

These findings led to several debates in the French literature, one's opinion depending on the way one interprets gender differences in labor market behaviour. Some argue that this a proof that getting a precarious job is more common among women since even their access to a less stable job depends on the diploma. Others believe that getting a CDD is rather a strategy chosen by women to get temporarily a job which allows them to benefit from good social conditions that ultimately will put them in a better material position if they wish to leave the labor market. As far as individuals with a unlimited duration contract are concerned, it is clear that this represents a more ‘prestigious’ job status, especially among men, so that the probability of getting such a contract rises in a linear way with the level of education.

Working while studying and the motivations to stay in the educational system

Another interesting finding is that, whatever the type of employment, individuals who stated that they stopped studying because they wanted to work, have the highest probability of finding a job. In other words, individuals who make clear decisions as far as their professional life is concerned, are more motivated and more successful. Those however who leave the educational system because they are "fed up" with school and fear that they will not succeed if they go on studying beyond some level, seem to be detected by the firms (through various forms of recruiting techniques) and often left aside by them.
Similarly firms do not seem to look after individuals who decided to leave school to be able to "cover their needs" and these young people are more often recruited on a short term basis. It seems therefore that employers who desire to hire somebody on a long run basis will take into account not only the educational level of the potential employee but also what motivated him to look for a job.

Our model allows us also to analyse the profitability of working while studying, in terms of the probability of succeeding in the transition from school to work. The results however are not clear-cut. When women work on a regular basis while studying, they seem to be able to convince firms of their real capacities and we then find a positive effect on the probability of getting a stable job. On the contrary, other types of work while studying have a negative impact on the transition from school to work or at least do not have any significant effect except for summer jobs that allow young people to increase the probability of getting a CDD during the first years of their working life.

But generally speaking, most of the working experiences are considered as precarious jobs and seem to have a negative impact on the professional situation of the youth, as if they implied a deterioration of the human capital the individual had previously acquired. Since we do not have any information on the number of weekly hours the individual worked while studying, we are unable to make a finer analysis. Some studies (Dagenais *et al.*, 2001) have shown that this type of depreciation of the human capital should not be neglected.
Actually it is very important to know how many hours an individual worked while studying, as the probability of dropping out could be considered for instance to be a linear function of the number of hours worked while studying. If this number is reasonable, it may on the contrary indicate that these individuals are very motivated and will easily manage in combining study and work.

The transition from school to work and the impact of family factors

At this stage let us take a look at the impact of the family background and of the relationship between the young and his/her family on his/her situation in the labor market. What can be observed first is that the effects are very similar for men and women as far as getting a CDD is concerned. Young people who are the most independent from their parents have the highest probability of getting a CDD. Parameter estimates using a probit model with correlated individual effects do not change significantly these findings. It thus appears that becoming an adult implies leaving the parental home, living with his (her) spouse or even lonely, and finding a job, even if it is precarious.

As far as CDI jobs are concerned, gender differences are significant. While living with one's parents has a negative impact on the probability of getting a CDI, living alone or as a couple has a positive effect on this probability. Among young men living with a spouse, the probability of getting a CDI is higher than among young men living alone. Among women, living as a couple does not have any significant effect. These results are even more striking in the latent class model, in which we can observe an increased heterogeneity of the previous effects.

The following table reports some estimations by gender and job status (CDI versus CDD) on the basis of the latent class model.

Table 4 – Probit model with latent class, with a focus on the pattern of living and estimated points of support

Male (CDI)			Male (CDD)	
Class	Parameter Estimate	Relationship with parents, order of probabilities	Parameter Estimate	Relationship with parents, order of probabilities
Pr(Class 1)	0.46	Parents>Spouse> alone	0.57	Parents≅Spouse≅ alone
Pr(Class 2)	0.21	alone ≅Spouse>Parents	0.24	Alone>Parents> Spouse
Pr(Class 3)	0.31	alone≅Spouse> Parents	0.17	alone ≅Spouse>Parents

Female (CDI)			Female (CDD)	
Class	Parameter Estimate	Relationship with parents, order of probabilities	Parameter Estimate	Relationship with parents, order of probabilities
Pr(Class 1)	0.4	Parents≅Spouse≅ Alone	0.66	Parents≅Spouse≅ alone
Pr(Class 2)	0.21	Parents≅Spouse≅ Alone	0.13	Alone≅Spouse> Parents
Pr(Class 3)	0.19	Alone≅Spouse> Parents	0.21	Alone≅Spouse> Parents
Pr(Class 4)	0.19	Alone≅Spouse> Parents	-	-

These results clearly show the impact of the type of the relationship between young people and their parents. They confirm for men the positive impact on the probability of being recruited on a CDI basis (class 2 and 3 of the latent class model) of living alone or as a couple, that is of having left the parental home. Among women, living alone or as a couple does not affect differently the probability of getting a CDD. Leaving the parental home improves however in two out of four classes the probability of getting a CDI.
In other words, the probability of getting a CDI strongly depends on the relationship between young people and their parents, this being true for both men and women. Living away from one's parents' home plays the role of an incentive to look for a job in order to preserve one's independence and ultimately leads to a more stable path towards adulthood.

However, while young men seem to give the priority to work over family in order to guarantee their independence, women are more likely to be under pressure (a kind of social pressure) to combine family and professional objectives. The labor supply of women is thus constrained by family responsibilities (Battagliola, 2001; Daune-Richard, 2001).
Even though a stronger attachment of women to the labor force implies a greater degree of emancipation, in particular with respect to family tasks, the fact remains that their situation in the labor market is more vulnerable and that the jobs offered to them are different from those proposed to men. They are more often employed on a part-time basis and their wages, ceteris paribus, are lower (Blöss, 2001). Frequently the jobs they hold are similar to the domestic tasks they would implement at home, at least for those with a low level of education. In addition, as will now be shown, maternity seems to be for women a barrier to career building.

The findings concerning CDD job contracts among men are more heterogeneous. Even though there does not seem to be a unique model linking the family and professional areas, the degree of independence from the parents, as far as living arrangements are concerned, has a positive impact on the transition towards CDD-type jobs.
If we include in the analysis the number of months living with one’s parents, with a spouse or alone, the parameters' estimates from the probit model with random effects clearly show that the higher the number of months living as a couple or alone, the higher the probability of getting a CDI-type job and the lower that of getting a CDD-type job. The time elapsed since leaving the parental home encourages young individuals to look for job stability and favors the transition to adulthood. Findings for young women, are quite similar, though to a lesser extent.

Family commitment and transition to work

The parameters' estimates from the probit model with random effects show significant gender differences as far as the link between having children and being integrated in the labor force is concerned. Having children and raising them is an important factor explaining the divergence between the paths followed over time by men and women. It thus appears that the real threshold in the transition from school to work is not so much the decision to live as a couple as the constraints implied by raising of children.

Our results reveal clearly that for young men the number of children has a very significant positive impact on the probability of getting a CDI-type job. As long as there are less than three children, the probability of getting a CDI-type job does not depend on the number of children. On the other hand, having children (less than three) has no effect on the probability of getting a short term contract (CDD). These findings are thus different from those observed for women. For them having children is a real constraint affecting their situation in the labor market. The probability of getting a CDD- or CDI-type job decreases with the number of children. As long as young women do not have children, they are able to seek and find jobs. These findings confirm those of studies from the sociological or anthropologic literature stressing that when women start their marital life, their link to the labor market becomes more diffuse (Bloss, Frickey, Novi, 1994). More precisely, the age of the women at the time of the first maternity seems to have a significant impact on the probability to participate in the labor force and this effect is stronger than that of the level of education or of the social background (Marry, Fournier and Kieffer,1995).

Young women are also much more discouraged to participate to a more selective labor market when they have a low level of qualification or have family responsibilities. They are then more likely to be employed in economic sectors characterized by precarious jobs, whereas the alternative and more specialized jobs would require a greater degree of availability in terms of time, something that is not easily compatible with family tasks.

Conclusion

This paper based on longitudinal data looked at the relationship between the links with the family and labor market outcomes among young men and women having left the educational system in 1998. Even though the schooling level and the job experience have, as expected, an important effect on the probability to have a given job status in the labor market, it appears that there are

important gender differences in the impact on the transition from school to work of the efforts made to balance family constraints with a professional career. Leaving the parental home is a factor that improves the probability of getting a job, this being true for young men as well as for young women. The findings are somewhat different as far as getting a CDD-type contract is concerned.

There are also gender specific impacts on labor market outcomes of the birth of children. For young men raising up to three children does not seem to have an effect on their commitment to professional life. For young women however maternity seems to be an impediment to professional achievement, since it lowers the probability of getting a CDI- and even sometimes a CDD-type contract.

Some of our results seem to justify a social model in which the career achievements of men depend on the domestic investments made at home towards realizing such professional plans. These domestic investments are mainly made by their spouse since women reduce their participation to the labor force in order to contribute to the career of their husbands and to raise children. A symmetric situation is not observed among men: hitherto men did not invest more in family tasks when their wife desires to build up her career.

From a theoretical point of view, collective labor supply models (Chiappori, Fortin, Lacroix, 2001) represent a major improvement in comparison to the unitary model but would be more realistic if they explicitly included housework. Estimates of the average time spent in housework show that the share of women in domestic work is around 80% (Moreau, 2002). Chiappori (1997) developed a collective model of labor supply including domestic work. There is however room for a larger model taking into account the fact that raising children should be considered as a public good. It should be clear however that at this stage data constraints are a serious impediment to a successful empirical investigation of such a model.

Our paper is thus a contribution to the debate around the links between family and active life (Blöss, 2001). One could argue that the direction of the causality is completely opposite. A relevant strategy would then be to estimate a system of simultaneous equations with qualitative dependent variables, on the basis of longitudinal data. The econometrics of panel data is however unable at this stage to solve such an estimation strategy with datasets such as ours. Even with cross-sections the estimation of qualitative simultaneous equation models is a complicated task, the main difficulty being linked to “incoherence” issues (see, Dagenais, 1999, and Woolridge, 2002, for more details).

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Appendix A

The French Educational System

The educational system is administered by the Ministry of Education and divided in six levels (Annex 1) and three segments: the first segment covers the period from the pre-elementary instruction to the end of the primary school ; the second includes both the secondary education provided in middle schools (*collèges* or first cycle) or high school (*lycées* or second cycle) and the vocational education taking place in vocational high schools ; the third is made up of the tertiary education structures (University, *Grandes Écoles*, etc.). Education is compulsory until the age of sixteen.

Usually, the age at the end of primary education is eleven. Secondary education takes place between the ages of eleven and eighteen, depending on the diploma prepared. Tertiary education finally starts at the age of eighteen. Primary education includes pre-elementary education (kindergarten) which is not compulsory (2'450'000 children in 1996-1997). Secondary education is divided in two educational sequences, lower secondary education (3'220'000 students in 1996-1997) and upper secondary education (2'470'000 students in 1996-1997). The lower secondary education consists generally of four years. The first two years are the 6th and 7th grades and are relatively homogeneous; however, after the 7th grade, several paths are possible. In the 8th grade several alternatives are open: technical 8th grade and classes that prepare to apprenticeship. The 9th grade which represents the last year of lower secondary school includes the same distinctions as the 8th grade. At the end of the 9th grade students may take an examination leading to a diploma called *BEPC*. However getting or not the *BEPC* has no influence on the future orientation in upper secondary. Upper secondary levels are separated into two paths : orientation towards the baccalaureate (general or technical) or towards a vocational qualification (*CAP* – Certificate of Vocational Aptitude – or *BEP* – Diploma of Vocational Studies) obtained in two or three years. After the *BEP*, students can continue towards the recently created (1987) vocational baccalaureate ; two years are necessary. Vocational diplomas (such as CAP and BEP) can be prepared in two types of programmes : Academic programmes (700'000 students in 1996-1997) or apprenticeship programmes (285'000 apprentices in 1996-1997). The last one proposes to alternate period at school with time spent with an apprenticeship master.

There are three series of general baccalaureates: S for scientific, L for literary and ES for Economic and Social; 25 technological baccalaureates; 60 vocational baccalaureates; 47 BEP and 234 CAP.

After the baccalaureate, students can join higher education, which is organised in several types of institutions. Traditionally, one can distinguish four paths of higher education: Universities (two third of the students in higher education), special schools, STS (Departments of Higher Technicians), IUT (University Institutes of Technology). The last three paths are considered more vocational than the university path, because they prepare to diploma oriented towards immediate entry into the working life and propose systematically different periods of training in the firm. University contains seven types of diploma organised in three cycles: the DEUG, after the two first years, represent the first cycle; the *Licence*, after three years, is the first year of the second cycle; the *Maîtrise*, after four years, is the second year of the

second cycle; the Master of engineering diploma, followed in Vocational University Institutes (IUP), is obtained after four years too; the DEA (Diploma of Advanced Studies) and DESS (Diploma of Higher Special Studies) after five years, are the first year of the third cycle; finally, the Ph.D after eight years concludes the third cycle.

Special schools prepare for a baccalaureate + 2 years diploma or a baccalaureate + 4 or 5 years diploma. Special schools are smaller than Universities and are selective, due to the limited number of available openings. They also include prestigious schools called *Grandes Écoles* which are engineering schools or business and management schools.

The IUT (108'000 students in 1996-1997) and STS (230'000 students) prepare to vocational diplomas at a technician level (baccalaureate +2 years). An IUT mainly recruits among students who obtained a general baccalaureate, while STS recruit among students holding a technological or a vocational baccalaureate. While these diplomas were initially created to solve problems related to the lack of high level technicians in the labor market, students in these training programmes often do not stop their studies at this level and continue their studies, mainly in Universities. Thus about 2/3 of DUT graduates and 1/3 of BTS graduates continue their studies after graduating from the first cycle.

APPENDIX B

Table 5 – Statistics concerning the variables used for empirical modelling

	Male		Female	
Sample size	Nt=70,155 N=23,385		Nt=55,026 N= 18,342	
	Mean	**Std-error**	**Mean**	**Std-error**
Cdd	0,1824	0,3862	0,2450	0,4301
Cdi	0,3155	0,4647	0,2817	0,4498
Age when leaving school	21,0397	2,8916	21,4948	2,9633
Educational level I-II	0,1679	0,3738	0,2190	0,4136
Educational level III	0,1592	0,3659	0,1969	0,3976
Educational level IV sup	0,0976	0,2968	0,1295	0,3358
Educational level IV	0,1562	0,3631	0,1590	0,3657
Educational level V'	0,0691	0,2536	0,0503	0,2186
Educational level VI	0,0276	0,1638	0,0273	0,1630
Educational level V	0,3224	0,4674	0,2179	0,4128
Financial reasons	0,2211	0,4150	0,2058	0,4043
Found a job	0,2972	0,4570	0,2421	0,4283
Reached the desired level of schooling	0,4700	0,4991	0,4590	0,4983
Could not pursue studying	0,0826	0,2752	0,0937	0,2914
"Tired" from studying	0,4407	0,4965	0,3814	0,4857
Casual jobs	0,2003	0,4002	0,2172	0,4123
Regular job	0,0653	0,2471	0,0954	0,2938
Summer jobs	0,5329	0,4989	0,5460	0,4979
Live with his(her) parents	0,6297	0,4829	0,4245	0,4943
Live with his(her) spouse	0,1740	0,3791	0,3741	0,4839
Live alone	0,1963	0,3972	0,2014	0,4011
Number of months living with parents	6,9328	5,0966	4,8847	5,1402
Number of months living with spouse	1,6431	3,8435	3,6044	5,0817
Number of months living alone	1,9324	4,0656	1,9988	4,1023
Only one child	0,0528	0,2236	0,1569	0,3637
Two children	0,0119	0,1086	0,0278	0,1644
Three or more	0,0028	0,0531	0,0040	0,0634
No children	0,9302	0,2548	0,8082	0,3937
Employed	0,8045	0,3966	0,7779	0,4157
Out of the labour force	0,0304	0,1716	0,0335	0,1799
Unemployed	0,0304	0,1716	0,0335	0,1799

Table 6 - Probit Model with random effects (3 period times)

	Male				Female			
	Probability that Cdi=1		**Probability that Cdd=1**		**Probability that Cdi=1**		**Probability that Cdd=1**	
	Parameter	Std-error	Parameter	Std-error	Parameter	Std-error	Parameter	Std-error
Constant	-4,602***	0,253	-2,468***	0,247	-4,720***	0,290	-2,777***	0,246
Age when leaving school	0,051***	0,011	-0,007	0,011	0,060***	0,012	0,036***	0,011
Educational level								
Educational level I-II	1,139***	0,090	-0,600***	0,088	1,004***	0,103	-0,226***	0,088
Educational level III	0,369***	0,071	-0,036	0,067	0,442***	0,088	0,558***	0,074
Educational level IV sup	-0,300***	0,083	-0,201***	0,076	0,066	0,094	-0,022	0,078
Educational level IV	0,140**	0,061	-0,043	0,058	0,179**	0,084	0,320***	0,069
Educational level V'	-0,722***	0,090	-0,389***	0,080	-0,484***	0,130	-0,601***	0,113
Educational level VI	-1,246***	0,149	-0,768***	0,128	-1,555***	0,208	-1,037***	0,161
Educational level V	Reference						-	-
Reasons for leaving the educational system								
Financial reasons	-0,194***	0,048	0,0574	0,0445	-0,095	0,059	0,014	0,050
Found a job	1,260***	0,044	0,3389***	0,0394	1,136***	0,055	0,438***	0,044
Reached the desired level of schooling	0,417***	0,042	0,1405***	0,0396	0,618***	0,054	0,313***	0,045
Could not continue studying	-0,393***	0,076	-0,0426	0,0694	-0,221**	0,087	0,130*	0,071
"Tired" of studying	Reference							
Professional experience while studying								
Casual jobs	0,045	0,050	-0,0406	0,0463	-0,158***	0,058	0,024	0,049
Regular job	0,061	0,077	0,0963	0,0733	0,498***	0,078	0,004	0,067
Summer jobs	-0,238***	0,043	0,1394***	0,0403	-0,259***	0,051	0,331***	0,043
Training courses	Reference							
Relationship with the parents								
Live with his(her) parents	-0,555***	0,049	-0,3413***	0,0521	-0,433***	0,055	-0,225***	0,052
Live with his(her) spouse	0,172***	0,062	-0,0325	0,0711	-0,007	0,060	-0,044	0,057
Live alone	Reference							
Number of months living with parents	0,152***	0,004	0,06712***	0,00376	0,084***	0,005	0,022***	0,004
Number of months leaving with spouse	0,178***	0,006	0,04557***	0,00625	0,101***	0,005	0,005	0,005
Number of months leaving alone	0,188***	0,005	0,03949***	0,00548	0,101***	0,006	-0,004	0,005
Number of children								
Only one child	0,124	0,087	0,0047	0,0835	-0,414***	0,069	-0,309***	0,058
Two children	-0,083	0,167	0,0753	0,1659	-1,257***	0,154	-0,834***	0,139
Three or more	-0,795**	0,320	-0,0493	0,3392	-0,603*	0,339	-0,855***	0,319
No children	Reference							
Fathers' situation on the labour market								
Employed	0,265**	0,120	0,0627	0,1093	0,372***	0,139	-0,034	0,116
Out of the labour force	-0,011	0,128	0,0134	0,1171	0,211	0,147	-0,176	0,123
Unemployed	Reference							
Rho coefficient	0,852***	0,003	0,810***	0,005	0,871***	0,003		
-Log-Likelihood	29928,98		26067,39		22231,86		23334,48	

Note : *** 1%, ** 5%, * 10% levels of significance

Table 7 – Probit model with latent class estimation

	Male				Female			
	Probability that Cdi=1		**Probability that Cdd=1**		**Probability that Cdi=1**		**Probability that Cdd=1**	
	Parameter	Std-error	Parameter	Std-error	Parameter	Std-error	Parameter	Std-error
Class 1								
Constant	-0.8620*	0.4635	-2.9671***	0.5868	-1.566	307.214	-0.7614***	0.2455
Age when leaving school	-0.0768***	0.0149	0.0096	0.0185	-0.9298	0.6976	-0.0205**	0.0101
Educational level								
Educational level I-II	0.8839***	0.1145	-0.3582**	0.1728	-3.7817	1.04E+12	0.0113	0.0843
Educational level III	0.2929***	0.1026	0.3339***	0.1048	1.0175	2436.20	0.3410***	0.0703
Educational level IV sup	0.3547***	0.1217	0.0237	0.1303	0.6579	2069.86	0.1672**	0.0745
Educational level IV	-0.0170	0.1058	-0.0166	0.1093	2.8243	4.7633	0.1972***	0.0681
Educational level V'	-0.4432*	0.2668	-0.1469	0.1791	-0.9745	121.839	-3.5769	3463.26
Educational level VI	-2.8133	844.306	-4.7221	78.874E-2	-3.3595	1105.77	-0.5624*	0.3232
Educational level V	Reference	-	-	-	-	-	-	-
Reasons for leaving the educational system								
Financial reasons	0.0285	0.06543	-0.0248	0.0815	-1.2229	16.3976	0.0928**	0.0419
Found a job	0.4550***	0.0587	-2.1683	12.4029	0.6352	0.9271	0.0196	0.0402
Reached the desired level of schooling	0.1614***	0.0611	0.0876	0.0679	0.5396	0.7954	0.1007**	0.0397
Could not continue studying	-0.0831	0.1386	0.1155	0.1099	0.2421	1.2120	0.0937	0.0612
"Tired" of studying	Reference	-	-	-	-	-	-	-
Professional experience while studying								
Casual jobs	0.0133	0.0637	-0.0722	0.0820	-0.4084	1.4836	0.0096	0.0417
Regular job	0.0603	0.0875	-0.0223	0.1365	-0.9217	13.6063	0.0919*	0.0555
Summer jobs	-0.1198**	0.0570	0.0238	0.0680	0.4676	0.9576	0.2899***	0.0415
Training courses	Reference							
Relationship with the parents								
Number of months living with parents	-0.1166***	0.0188	0.0777***	0.0267	1.0080	19.1687	-0.0915***	0.0085
Number of months living with spouse	-0.0360***	0.0135	0.0530*	0.0288	0.8536	43.8390	-0.0924***	0.0098
Number of months living alone	-0.0024	0.0133	0.0669**	0.0289	-2.6125	5.30E+08	-0.0913***	0.0100
Live with his(her) parents	0.3934**	0.1600	-0.1070	0.1504	0.5764	184.37900	0.0723	0.0881
Live with his(her) spouse	0.3156**	0.1430	0.2202	0.1900	-0.7882	185.75800	-0.1033	0.0998
Live alone	Reference	-	-	-	-	-	-	-
Number of children								
Only one child	0.0829	0.0983	-1.1068	0.9417	0.2201	2.97198	-0.0334	0.0560
Two children	0.3570***	0.1297	-3.2815	14.7255E-3	-0.4402	1896.06	-0.1946	0.1725
Three or more	-2.4934	526.709	-2.4038	808.3420	-0.3449	2.33E+06	-6.26803	4.82E+10
No children	Reference	-	-	-	-	-	-	-
Fathers' situation on the labour market								
Employed	0.3462	0.3273	0.0528	0.1930	0.7816	87.74170	-0.0424	0.1026

Out of the labour force	0.3062	0.3333	0.1298	0.2046	-0.6415	102.27200	-0.0927	0.1095
Unemployed	Reference							
Class 2								
Constant	-1.3130***	0.2845	0.2533	0.3323	-0.4849	0.4161	-2.9022***	0.6581
Age when leaving school	0.0197	0.0127	-0.0254	0.0140	-0.0242	0.0170	0.1204***	0.0295
Educational level								
Educational level I-II	-1.6633***	0.1254	-0.4338***	0.1201	0.5074***	0.1465	-0.0952	0.2000
Educational level III	-2.2732***	0.1123	-0.3623***	0.1172	-0.0090	0.1244	0.8251***	0.3000
Educational level IV sup	-3.3035***	0.1635	-0.1962*	0.1155	-0.0148	0.1351	0.0751	0.1453
Educational level IV	0.0851	0.0700	-0.0481	0.0804	-0.2686**	0.1365	-1.5332***	0.2180
Educational level V'	-0.7416***	0.0732	-0.2097*	0.1135	-0.5146**	0.2626	-0.5082***	0.1183
Educational level VI	-1.1122***	0.0899	-0.5192***	0.1788	-3.3537	119.449	-0.6670***	0.1523
Educational level V	Reference	-	-	-	-	-	-	-
Reasons for leaving the educational system								
Financial reasons	-0.2210***	0.0537	0.2500***	0.0601	-0.0310	0.0764	-0.1691*	0.0930
Found a job	1.4276***	0.0731	0.5203***	0.0850	0.7767***	0.0698	1.1549***	0.1693
Reached the desired level of schooling	0.2981***	0.0509	0.0911*	0.0558	0.3403***	0.0723	0.3607***	0.1011
Could not continue studying	-0.3525***	0.0739	-0.0913	0.1120	-0.1550	0.1312	0.0658	0.1119
"Tired" of studying	Reference	-	-	-	-	-	-	-
Professional experience while studying								
Casual jobs	0.0648	0.0563	-0.0508	0.0654	-0.0017	0.0759	-0.1169	0.0959
Regular job	0.1311	0.0906	0.2045**	0.1002	0.6173***	0.0915	0.0826	0.1557
Summer jobs	-0.2208***	0.0477	0.1384**	0.0572	-0.1241*	0.0679	0.1254	0.0836
Training courses	Reference	-	-	-	-	-	-	-
Relationship with the parents								
Number of months living with parents	0.1996***	0.0084	-0.0810***	0.0102	-0.0641***	0.0141	0.1853***	0.0214
Number of months living with spouse	0.2898***	0.0159	-0.0805***	0.0140	-0.0213*	0.0119	0.1407***	0.0245
Number of months living alone	0.2498***	0.0109	-0.1088***	0.0135	0.0055	0.0128	0.1040***	0.0262
Live with his(her) parents	-0.5696***	0.0930	-0.2204**	0.1066	0.0403	0.1338	-0.8568***	0.2622
Live with his(her) spouse	-0.1178	0.1369	-0.2876*	0.1513	0.1522	0.1285	-0.0915	0.2887
Live alone	Reference	-	-	-	-	-	-	-
Number of children								
Only one child	0.0114	0.1136	0.1493	0.1144	-0.3367***	0.0933	-0.2910***	0.1071
Two children	-1.3486***	0.2171	0.3395*	0.2003	-1.6394***	0.3971	-1.1161***	0.2498
Three or more	1.4604	1.1745	0.805703**	0.320265	-6.1647	2.23E+08	2.1159	205.9700
No children	Reference	-	-	-	-	-	-	-
Fathers' situation on the labour market								
Employed	0.3558***	0.1223	-0.0262	0.1455	-0.2230	0.1849	0.3695**	0.1756
Out of the labour force	0.1636	0.1299	-0.0534	0.1586	-0.2358	0.1961	0.2233	0.1882
Unemployed	Reference	-	-	-	-	-	-	-

Class 3								
Constant	-3.8542***	0.2425	-0.9631***	0.2672	-5.3549***	0.5038	-2.3674***	0.3250
Age when leaving school	0.0747***	0.0106	0.0141	0.0109	0.1032***	0.0181	0.0640***	0.0136
Educational level								
Educational level I-II	1.6789***	0.0896	-0.3598***	0.0911	0.9326***	0.1477	-0.1106	0.1087
Educational level III	1.6627***	0.0691	-0.1764**	0.0709	0.7436***	0.1264	0.6839***	0.0942
Educational level IV sup	1.2004***	0.0660	-0.4125***	0.0739	-0.1077	0.1340	-0.1217	0.0955
Educational level IV	0.1395**	0.0553	-0.0079	0.0622	2.2794***	0.1643	1.3397***	0.1188
Educational level V'	-0.4971***	0.0931	-0.4268***	0.0721	-0.4976**	0.2197	-0.3782***	0.1295
Educational level VI	-0.9483***	0.1781	-0.6484***	0.0988	-1.4233***	0.4497	-0.8308***	0.2595
Educational level V	Reference	-	-	-	-	-	-	-
Reasons for leaving the educational system								
Financial reasons	-0.1969***	0.0388	-0.0596	0.0455	-0.1856**	0.0759	-0.0870	0.0592
Found a job	1.3179***	0.0477	0.7619***	0.0489	1.3914***	0.0943	0.7120***	0.0614
Reached the desired level of schooling	0.2172***	0.0356	0.0805**	0.0411	0.4582***	0.0706	0.2824***	0.0546
Could not continue studying	-0.3430***	0.0594	-0.1782***	0.0619	-0.2119*	0.1094	0.1169	0.0849
"Tired" of studying	Reference	-	-	-	-	-	-	-
Professional experience while studying								
Casual jobs	0.1042**	0.0424	0.0567	0.0472	-0.1277*	0.0725	-0.0667	0.0581
Regular job	0.1564**	0.0667	0.1408*	0.0798	0.4851***	0.1059	0.1159	0.0834
Summer jobs	-0.1812***	0.0361	-0.0468	0.0407	-0.2779***	0.0671	0.2836***	0.0521
Training courses	Reference	-	-	-	-	-	-	-
Relationship with the parents								
Number of months living with parents	0.1432***	0.0067	0.1935***	0.0088	0.2031***	0.0165	0.0729***	0.0104
Number of months living with spouse	0.1572***	0.0110	0.1679***	0.0132	0.2199***	0.0172	0.0541***	0.0101
Number of months living alone	0.1516***	0.0085	0.1535***	0.0108	0.2004***	0.0178	0.0526***	0.0119
Live with his(her) parents	-0.6563***	0.0794	-0.6057***	0.1004	-0.7136***	0.1490	-0.2407**	0.1087
Live with his(her) spouse	0.0931	0.1111	0.0473	0.1335	-0.0405	0.1546	0.0412	0.1141
Live alone	Reference	-	-	-	-	-	-	-
Number of children								
Only one child	0.1979**	0.0865	0.0094	0.0912	-0.3799***	0.0934	-0.3369***	0.0709
Two children	10.592	327E-12	0.2756	0.1927	-1.2402***	0.1965	-0.6972***	0.1506
Three or more	-0.9940**	0.4388	3.8543	3256.89	-1.5851***	0.5907	-0.0529	0.5238
No children	Reference	-	-	-	-	-	-	-
Fathers' situation on the labour market								
Employed	0.2110**	0.0966	0.0075	0.1071	0.5242***	0.2065	-0.0620	0.1327
Out of the labour force	0.1023	0.1029	-0.1255	0.1141	0.3689*	0.2145	-0.1293	0.1412
Unemployed	Reference	-	-	-	-	-	-	-
Class 4								
Constant	-	-	-	-	-2.8076***	0.3719	-	-
Age when leaving school	-	-	-	-	0.1548***	0.0176	-	-

Educational level								
Educational level I-II	-	-	-	-	0.3598**	0.1788	-	-
Educational level III	-	-	-	-	0.3517***	0.1208	-	-
Educational level IV sup	-	-	-	-	-0.1673*	0.0913	-	-
Educational level IV	-	-	-	-	-1.5277***	0.1352	-	-
Educational level V'	-	-	-	-	-0.1739*	0.0987	-	-
Educational level VI	-	-	-	-	-0.8613***	0.1085	-	-
Educational level V	Reference	-	-	-	-	-	-	-
Reasons for leaving the educational system								
Financial reasons	-	-	-	-	-0.0866	0.0677	-	-
Found a job	-	-	-	-	1.2674***	0.1234	-	-
Reached the desired level of schooling	-	-	-	-	0.3860***	0.0736	-	-
Could not continue studyying	-	-	-	-	-0.1529**	0.0773	-	-
"Tired" of studying	Reference	-	-	-	-	-	-	-
Professional experience while studying								
Casual jobs	-	-	-	-	-0.1515**	0.0680	-	-
Regular job	-	-	-	-	0.3173**	0.1253	-	-
Summer jobs	-	-	-	-	-0.2546***	0.0620	-	-
Training courses	Reference	-	-	-	-	-	-	-
Relationship with the parents								
Number of months living with parents	-	-	-	-	0.0890***	0.0116	-	-
Number of months living with spouse	-	-	-	-	0.0873***	0.0144	-	-
Number of months living alone	-	-	-	-	0.0568***	0.0141	-	-
Live with his(her) parents	-	-	-	-	-0.5554***	0.1398	-	-
Live with his(her) spouse	-	-	-	-	-0.2158	0.1571	-	-
Live alone	Reference	-	-	-	-	-	-	-
Number of children								
Only one child	-	-	-	-	-0.3172***	0.0781	-	-
Two children	-	-	-	-	-0.9199***	0.1466	-	-
Three or more	-	-	-	-	5.5370	223869	-	-
No children	Reference	-	-	-	-	-	-	-
Fathers' situation on the labour market								
Employed	-	-	-	-	0.2207*	0.1248	-	-
Out of the labour force	-	-	-	-	0.0646	0.1355	-	-
Unemployed	Reference	-	-	-	-	-	-	-
Pr (Class1)	0.4641***	0.00625112	0.5742***	0.0151	0.4167***	0.0110	0.6625***	0.0071
Pr (Class2)	0.2188***	0.00515299	0.2462***	0.0145	0.2060***	0.0109	0.1278***	0.0099
Pr (Class3)	0.31713***	0.00677851	0.1796***	0.0040	0.1903***	0.0100	0.2097***	0.0096
Pr (Class4)					0.1870***	0.0070		

Note : *** 1%, ** 5%, * 10% levels of significance

Table 8 – Probit model with individual correlated effect

In the model estimated, linear projections are made on duration variables but are not reported here

	Male				**Female**			
	Probability that Cdi=1		**Probability that Cdd=1**		**Probability that Cdi=1**		**Probability that Cdd=1**	
	Parameter	Std-error	Parameter	Std-error	Parameter	Std-error	Parameter	Std-error
Constant	-0,8912***	0,1030	-0,8728***	0,1118	-0,9293***	0,1090	-0,7998***	0,1074
Age when leaving school	-0,0017	0,0042	0,0012	0,0046	0,0045	0,0045	0,0140***	0,0044
Educational level								
Educational level I-II	0,3620***	0,0330	-0,2364	0,0369	0,3255***	0,0357	-0,0882**	0,0356
Educational level III	0,1878***	0,0261	-0,0265	0,0276	0,2157***	0,0307	0,1411***	0,0296
Educational level IV sup	0,0373	0,0299	-0,1313	0,0309	0,0616*	0,0321	-0,0060	0,0306
Educational level IV	0,0760***	0,0232	-0,0309	0,0239	0,1156***	0,0285	0,0887***	0,0269
Educational level V'	-0,1710***	0,0333	-0,1173	0,0320	-0,0946**	0,0451	-0,1198***	0,0426
Educational level VI	-0,3111***	0,0554	-0,2936	0,0522	-0,2532***	0,0676	-0,3098***	0,0605
Educational level V	Reference	-	-	-	-	-	-	-
Reasons for leaving the educational system								
Financial reasons	-0,0087	0,0174	-0,0008	0,0180	-0,0271	0,0201	0,0064	0,0194
Found a job	0,1100***	0,0166	0,0407**	0,0177	0,1084***	0,0195	0,0480**	0,0194
Reached the desired level of schooling	0,1117***	0,0154	0,0389**	0,0163	0,1280***	0,0183	0,0765***	0,0179
Could not continue studying	-0,0655**	0,0273	0,0103	0,0268	-0,0675**	0,0295	0,0256	0,0270
"Tired" of studying	Reference	-	-	-	-	-	-	-
Professional experience while studying								
Casual jobs	-0,0055	0,0179	-0,0078	0,0190	-0,0359*	0,0198	-0,0042	0,0193
Regular job	-0,0537*	0,0290	0,0339	0,0312	-0,0477*	0,0276	0,0147	0,0278
Summer jobs	0,0055	0,0156	0,0366**	0,0165	-0,0151	0,0177	0,0555***	0,0173
Training courses	Reference	-	-	-	-	-	-	-
Relationship with the parents								
Live with his(her) parents	0,0019	0,0052	0,0029	0,0055	0,0024	0,0058	-0,0200***	0,0056
Live with his(her) spouse	0,0131	0,0084	0,0001	0,0094	0,0216***	0,0068	-0,0270***	0,0068
Live alone	Reference	-	-	-	-	-	-	-
Number of months living with parents	0,0072	0,0070	-0,0102	0,0080	0,0009	0,0074	-0,0212***	0,0076
Number of months living with spouse	-0,3233***	0,0391	-0,2389***	0,0437	-0,2918***	0,0428	-0,1142***	0,0434
Number of months living alone	0,0986*	0,0504	-0,0345	0,0579	-0,0155	0,0461	0,0002	0,0471
Number of children								
Only one child	-0,0023	0,0336	0,0471	0,0368	-0,1671***	0,0250	-0,1319***	0,0243
Two children	-0,0233	0,0685	-0,0255	0,0777	-0,4264***	0,0590	-0,3212***	0,0572
Three or more	-0,0025	0,1450	-0,2345	0,1657	-0,2818*	0,1443	-0,1456	0,1486
No children	Reference	-	-	-	-	-	-	-
Fathers' situation on the labour market								
Employed	0,0623	0,0433	0,0182	0,0435	0,0442	0,0465	-0,0112	0,0436
Out of the labour force	-0,0022	0,0461	0,0032	0,0466	0,0061	0,0493	-0,0756*	0,0465
Unemployed	Reference	-	-	-	-	-	-	-
-Log-Likelihood	19477.78		17532.64		14945.43		16128.01	

Note : *** 1%, ** 5%, * 10% levels of significance